

PATENT

Docket No. 0140-4126 US1

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UTILITY APPLICATION AND FEE TRANSMITTAL (1.53(b))

ASSISTANT COMMISSIONER FOR PATENTS

Box Patent Application

Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of

First named Inventor

or Application Identifier: C. Robert Gasparini, Peter E. Anselmo, Walter H. Cano

For: SOAK ON SITE AND SOAK ON PRESS CLEANING SYSTEM AND METHOD OF USING SAME

Enclosed are:

☒ 32 page(s) of specification, 1 page(s) of Abstract, 12 page(s) of claims

☒ 6 sheets of drawing ☐ formal ☒ informal (Figs. 1-8)

☐ 6 page(s) of Declaration and Power of Attorney

☐ Unsigned

☐ Newly Executed

☒ Copy from prior application

☐ Deletion of inventors including Signed Statement under 37 C.F.R. § 1.63(d)(2)

☐ Incorporation by Reference: The entire disclosure of the prior application, from which a copy of the combined declaration and power of attorney is supplied herein, is considered as being part of the disclosure of the accompanying application and is incorporated herein by reference.

☐ Microfiche Computer Program (Appendix)

☐ _____ page(s) of Sequence Listing

☐ computer readable disk containing Sequence Listing

☐ Statement under 37 C.F.R. § 1.821(f) that computer and paper copies of the Sequence Listing are the same

- ☐ Certified copy of Priority Document(s)
- ☐ English translation documents
- ☐ Information Disclosure Statement
- ☐ Copy of ___ cited references
- ☐ Preliminary Amendment
- ☐ Return receipt postcard (MPEP 503)
- ☐ Assignment Papers (assignment cover sheet and assignment documents)
- ☐ A check in the amount of \$40.00 for recording the Assignment.
- ☒ Assignment papers filed in parent application Serial No. 08/431,932.
- ☐ Certification of chain of title pursuant to 37 C.F.R. § 3.73(b).
- ☐ This is a ☐ continuation ☒ divisional ☐ continuation-in-part (C-I-P) of prior application serial no. 08/431,932.
- ☒ Cancel in this application original claims 1-43 of the parent application before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
- ☐ An Amendment is enclosed. (Claims added by this Amendment have been properly numbered consecutively beginning with the number following the highest numbered original claim in the prior application.
- ☐ The status of the parent application is as follows:
- ☒ A Petition For Extension of Time and a Fee therefor has been or is being filed in the parent application to extend the term for action in the parent application until June 15, 1998.
- ☐ A copy of the Petition for Extension of Time in the co-pending parent application is attached.
- ☐ No Petition For Extension of Time and Fee therefor are necessary in the co-pending parent application.
- ☐ Please abandon the parent application at a time while the parent application is pending or at a time when the petition for extension of time in that application is granted and while this application is pending has been granted a filing date, so as to make this application co-pending.
- ☐ Transfer the drawing(s) from the parent application to this application.
- ☒ Amend the specification by inserting before the first line the sentence:
This is a ☐ continuation ☒ divisional ☐ continuation-in-part of co-pending application Serial No. 08/431,932 filed May 1, 1995.

I. CALCULATION OF APPLICATION FEE

| | Number Filed | Number Extra | Rate | Basic Fee |
|---------------------------|--|--------------|------|-----------|
| | | | | \$ 790.00 |
| Total Claims | 7 | -20= | 0 | \$22.00 |
| Independent Claims | 2 | -3= | 0 | \$82.00 |
| Multiple Dependent Claims | <input type="checkbox"/> yes Additional fee = \$270.00 \$ <input type="checkbox"/> no Additional fee = NONE | | | \$ 0.00 |

Total: \$ 790.00

- ☐ A statement claiming small entity status is attached or has been filed in the above-identified parent application and its benefit under 37 C.F.R. § 1.28(a) is hereby claimed. Reduced fees under 37 C.F.R. § 1.9(F) (50% of total) paid herewith \$_____.
- ☐ A check in the amount of \$_____ in payment of the application filing fees is attached.
- ☒ Charge Fee(s) to Deposit Account No. 13-4500. Order No. 0140-4126 US1. A DUPLICATE COPY OF THIS DOCUMENT IS ATTACHED.
- ☒ The Assistant Commissioner is hereby authorized to charge any additional fees which may be required for filing this application, or credit any overpayment to Deposit Account No. 13-4500, Docket No. 0140-4126 US1. A DUPLICATE COPY OF THIS DOCUMENT IS ATTACHED.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

Dated: June 15, 1998By: Ian G. DiBernardo
Registration No.: 40,991

CORRESPONDENCE ADDRESS:

Morgan & Finnegan L.L.P.
 345 Park Avenue
 New York, New York 10154
 (212) 758-4800
 (212) 751-6849 Facsimile

FORM: UTL-TRAN.NY
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PATENT

Docket No. 0140-4126 US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : C. Robert Gasparrini, et al..

Serial No. : TBA
Divisional of Serial No. 08/431,932

Group Art Unit : TBA

Filed : June 15, 1998 **Examiner** TBA

For : **SOAK ON SITE AND SOAK ON PRESS CLEANING SYSTEM AND METHOD OF USING SAME**

EXPRESS MAIL CERTIFICATE

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Date of Deposit June 15, 1998

ASSISTANT COMMISSIONER FOR PATENTS

Box Patent Application

Washington, D.C. 20231

Sir:

I hereby certify that the attached Utility Application and Fee Transmittal enclosing 32 pages of specification, 12 pages of claims, 1 page of Abstract, and 6 sheets of drawings (Figs. 1-8); Previously filed Declaration (executed); and Return Postcard and this Express Mail Certificate, is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to the Assistant Commissioner of Patents and Trademarks, Box Patent Application, Washington, D.C. 20231.

Carlos Nieves

(Typed or printed name of person mailing paper(s) or fee)

(Signature of person mailing paper(s) or fee)

Mailing Address:

MORGAN & FINNEGAN, L.L.P.

345 Park Avenue

New York, New York 10154

(212) 758-4800

(212) 751-6849 Telecopier

UNITED STATES PATENT APPLICATION

of

C. Robert Gasparrini,
Peter E. Anselmo,
and
Walter H. Cano

FOR

SOAK ON SITE AND SOAK ON PRESS CLEANING
SYSTEM AND METHOD OF USING SAME

FIELD OF THE INVENTION

This invention relates to a cleaning system employing a strip of cleaning fabric wrapped around a core or a shaft to form a cleaning fabric supply roll. The strip of cleaning fabric is soaked at the site prior to use or is soaked on the press.

BACKGROUND OF THE INVENTION

A wide variety of blanket cleaning systems and apparatus employing the same to clean the cylinders of printing presses are known. Typical blanket cleaning systems and apparatus employing the same, including cleaning blankets and cleaning solutions, are exemplified by U.S. Patent No. 4,135,448 to Moestue which is directed to a mechanism for cleaning a cylinder that is provided with a cleaning cloth which is wetted with a cleaning fluid or solution prior to its encountering the pressure roller; U.S. Patent No. 4,934,391 to Futch et al. is

directed to a composition for ink removal that exhibits a low
vapor pressure and which is a low vapor pressure organic
compound; U.S. Patent No. 4,986,182 to Sawaguchi et al. is
directed to a cleaning apparatus in which a cleaning cloth is
5 dampened by a liquid; U.S. Patent No. 5,009,716 to Gerson is
directed to a wash for removing ink comprising a low volatile
organic compound; U.S. Patent No. 5,012,739 to Loos is directed
to a washing device comprising a cleaning cloth dampened with a
washing medium and U.S. Patent No. 5,069,128 to Hara is directed
10 to a device for cleaning a cylinder of a printing machine
comprising a cleaning cloth impregnated with a cleaning liquid.

In addition, U.S. Patent No. 5,104,567 to Staehr is
directed to a liquid for cleaning ink from printing machines;
U.S. Patent No. 5,125,342 to Hara is directed to a method for
15 cleaning the cylinder of a printing machine; and U.S. Patent No.
5,143,639 to Krawack is directed to a cloth moistened with a low
vapor pressure cleaning agent for removing ink; whereas U.S.
Patent No. 5,188,754 to Weltman et al. is directed to a cloth
soaked with a cleaning formula and U.S. Patent No. 5,194,173 to
20 Folkard et al. is directed to a method for removing ink from
printing machines. Still further, U.S. Patent No. 4,344,361 and
4,757,763 to MacPhee et al. is directed to automatic blanket
cylinder cleaners provided with cleaner fabrics adapted to
contact the blanket cylinders of printing presses. On the other
25 hand, U.S. Patent No. 5,175,080 to Gasparrini et al. is directed

to a cloth supply system for the blanket cylinder for use in printing presses.

While the above-mentioned patents accomplish their purposes to a satisfactory extent, they still exhibit a variety of drawbacks. For example, they usually require apparatus, such as pumps, spray bars, manifold lines, valves, and the like as part of the automatic blanket cleaning systems for introducing the cleaning solvents or solutions to the cleaning fabric just prior to actual use.

U.S. Patent No. 5,368,157 to Gasparrini et al., the present applicants, attempted to overcome these problems. That patent is directed to a pre-packaged, pre-soaked cleaning system for use with printing machines or the like to clean the cylinders of such machines and which comprises a pre-soaked fabric roll saturated to equilibrium with low volatility organic compound solvent and which is disposed around an elongated, cylindrical core and a sealed or a shrunken and sealed plastic sleeve disposed around and in contact with the fabric roll, whereby the pre-soaked saturated roll can be transported and stored vertically and/or horizontally until use without substantially disturbing the distribution of the solvent in the fabric roll and detrimentally effecting the cleaning ability of the fabric.

While the invention disclosed in U.S. Patent No. 5,368,157 works for its intended purpose, improvements have been discovered. When the patented product is placed in the vertical position, the solvent would shift downward in the evacuated

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package. When the package is restored to the horizontal position, the solvent migrates back towards equilibrium in the roll. This migration is caused by air pockets in the fabric of the roll.

5 There exists, therefore, a need for providing a blanket cleaning system which improves upon the above-mentioned conditions. The present invention fulfills such a need.

OBJECTS OF THE INVENTION

10 It is therefore an object of the invention to provide a new and improved system for soaking a strip of cleaning fabric for use in a cylinder cleaning system.

15 It is a further object of the invention to provide a new and improved system for soaking a strip of cleaning fabric which overcomes the drawbacks discussed above.

20 Another object of the invention is to provide a new and improved method in which a strip of cleaning fabric is presoaked on the same site as the press or in proximity to the press in which it is to be used to allow transportation of the presoaked cleaning fabric supply roll to the press without substantially disturbing the distribution of the solvent in the cleaning fabric supply roll and detrimentally affecting the cleaning ability of the fabric.

25 Another object of the invention is to provide a new and improved system in which a strip of cleaning fabric is soaked and saturated to functional equilibrium with a low volatility,

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organic compound solvent after it is unwound from a bulk roll but before it is wound into a cleaning fabric supply roll on a core or shaft.

Another object of the invention is to provide a new and improved method of soaking a strip of cleaning fabric on a cylinder cleaning apparatus while located on a press.

A yet another object of the invention is to provide a new and improved method of soaking a strip of cleaning fabric on a press while the strip of cleaning fabric is still wound in a cleaning fabric supply roll on a core or shaft.

A still further an object of the invention is to provide a new and improved method including the use of an adjustable means to remove excess solvent from the strip of cleaning fabric to control the amount of solvent retained by the strip of cleaning fabric.

A further object of the invention is to provide a new and improved soak on press system in which a single roller is used to both soak and saturate the strip of cleaning fabric in solvent and to remove excess solvent for the strip of cleaning fabric.

The foregoing specific objects and advantages of the invention are illustrative of those which can be achieved by the present invention and are not intended to be exhaustive or limiting of the possible advantages which may be realized. Thus, these and other objects and advantages of the invention will be apparent from the description herein or can be learned from

practicing the invention, both as embodied herein or as modified in view of any variations which may be apparent to those of ordinary skill in the art, the same being realized and attained by means of parts, constructions, instrumentations and combinations pointed out in the claims. The present invention resides in the novel parts, constructions, arrangements, combinations, methods and improvements herein shown and described.

SUMMARY OF THE INVENTION

In accordance with the invention, there is provided a method of cleaning a cylinder of a printing press using a soak on press system comprising first placing a cleaning fabric supply roll having a strip of cleaning fabric in a cylinder cleaning system. Second, the strip of cleaning fabric is brought in contact with a low volatility, organic compound solvent or cleaning agent which does not evaporate readily at ambient temperature and pressure and soaking and saturating the strip of cleaning fabric with the solvent or cleaning agent. The soaking and saturating may occur while the strip of cleaning fabric is part of the cleaning fabric supply roll or after it has been unwound from the cleaning fabric supply roll. An optional third step is removing any excess solvent or cleaning agent from the strip of cleaning fabric to obtain a strip of cleaning fabric saturated to functional equilibrium. Fourth, the strip of cleaning fabric is used to clean a cylinder.

In a more specific aspect of the method, the used strip of cleaning fabric is wound up on a take-up roll.

In still another more specific aspect of the method, at least a portion of the cleaning fabric supply roll is dipped in a container containing the solvent. The rotation of the cleaning fabric supply roll preferably causes the entire cleaning fabric supply roll to be soaked and saturated with solvent.

In yet another aspect of the method, the strip of cleaning fabric is unwound from the cleaning fabric supply roll prior to being brought in contact with the solvent. In a preferred method of this aspect, the strip of cleaning fabric is brought in contact with the solvent by means of a dipping roller.

In another more specific aspect of the method, the excess solvent is removed by squeezing the strip of cleaning fabric, preferably by using a squeezing roller or rollers. In a more specific embodiment of the method, the roller used for dipping the strip of cleaning fabric is the same roller as that used for squeezing the strip of cleaning fabric. In another embodiment, the location of the squeezing roller(s) are adjustable to control the amount of solvent in the strip of cleaning fabric.

The invention also includes a soak on press assembly for use in a printing press cylinder cleaning system. The assembly comprises a mounting assembly affixed to a printing press. A cleaning fabric supply roll including a strip of cleaning fabric is rotatably mounted to the mounting assembly.

Soaking means are used for soaking and saturating at least a portion of the strip of cleaning fabric with a low volatility, organic compound solvent which does not readily evaporate at ambient temperature and pressure and removal means used for removing excess solvent so that the strip of cleaning fabric is saturated to functional equilibrium with the solvent or cleaning agent. A cylinder cleaning means is used for bringing the strip of cleaning fabric into contact with a cylinder to be cleaned to clean the cylinder and the used strip of cleaning fabric is collected by a take-up means.

In another more specific embodiment, the soaking means contacts the strip of cleaning fabric to the solvent prior to its removal from the cleaning fabric supply roll.

In an alternate embodiment, the soaking means includes a roller means for placing the strip of cleaning fabric into said solvent to soak and saturate the strip of cleaning fabric. In a further more specific embodiment the removal means includes a squeezing means for squeezing excess solvent and, in one embodiment, said squeezing means and said roller means are a unitary structure.

The invention also comprises a soak on press assembly including a mounting assembly affixed to the printing press to support the soak on press assembly. A cleaning fabric supply roll including a strip of cleaning fabric is rotatably mounted on the mounting assembly. A low volatility, organic compound solvent which does not readily evaporate at ambient temperature

and pressure is placed in a container in engagement with the mounting assembly and at least a portion of the cleaning cloth supply roll is placed within the solvent to soak and saturate the strip of cleaning fabric. At least one squeezing roller is
5 operatively associated with the strip of cleaning fabric to removing excess solvent from the strip of cleaning fabric to obtain a strip of cleaning fabric saturated to functional equilibrium with solvent. Preferably, at least one roller is operatively associated with and in a movedly fixed relationship
10 with a surface of the container for removing excess solvent from the strip of cleaning fabric by squeezing it between the squeezing roller and the side of the container.

An alternate embodiment of the invention may also comprise a mounting assembly affixed to said printing press for supporting the soak on press assembly. A cleaning fabric supply
15 roll including a strip of cleaning fabric is rotatably mounted on the mounting assembly. A low volatility, organic compound solvent which does not readily evaporate at ambient temperature and pressure located in at least one container engaged with the mounting assembly. A dipper is at least partially submersed in
20 the solvent. The strip of cleaning fabric is adjacent the dipper so that the strip of cleaning fabric is soaked and saturated with the solvent. The strip of cleaning fabric is located in a gap between, and in contact with, a surface of the container and a
25 squeezer so that the strip of cleaning fabric is squeezed and the excess solvent removed and placed in the container and the strip

of cleaning fabric is placed in functional equilibrium. A cylinder cleaning means is used for bringing the saturated to functional equilibrium strip of cleaning fabric into contact with a cylinder to be cleaned and the cleaning apparatus. A take-up means is used for collecting the used strip of cleaning fabric.

In a more specific embodiment, a single container is used to store the solvent. In such an embodiment, the dipper and the squeezer may both be the same roller. In a different embodiment, the dipper and/or the squeezer are individual rollers.

The invention also includes a method for presoaking a strip of cleaning fabric on site. Broadly, the method includes contacting a strip of cleaning fabric with a low volatility, organic compound solvent which does not readily evaporate at ambient temperature and pressure and soaking and saturating the strip of cleaning fabric with the solvent. The strip of cleaning fabric is wrapped on a core or shaft to form a cleaning fabric supply roll. The cleaning fabric supply roll is engaged with a printing press having a cylinder to be cleaned without disposing a sealed plastic sleeve about the fabric roll and without substantially disturbing the distribution of the solvent in the cleaning fabric supply roll and detrimentally affecting the cleaning ability of the strip of fabric.

Preferably, after contacting the strip of cleaning fabric to the solvent, the strip of cleaning fabric is saturated to functional equilibrium. The preferred method of achieving

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this result is measured absorption of the solvent.

Alternatively, excess solvent may be removed from the saturated strip of cleaning fabric.

In another embodiment of a method for soaking a strip of cleaning fabric, a strip of cleaning fabric is unwound from a bulk roll. A low volatility, organic compound solvent which does not readily evaporate at ambient pressure and temperature is applied to at least one roller. The unwound strip of cleaning fabric is brought in contact with at least one roller to soak and saturate the strip of cleaning fabric with solvent. Preferably, the strip of cleaning fabric is saturated to functional equilibrium with the solvent. The soaked and saturated strip of cleaning fabric is wound on a core or directly on a shaft to form a cleaning fabric supply roll.

It will be appreciated by those skilled in the art that the foregoing summary of the invention and the following detailed description are merely exemplary and explanatory of the present invention, but are not intended to be restrictive thereof or limiting of the advantages which can be achieved by the invention or various combinations thereof. The accompanying drawings referred to herein and constituting in part hereof, illustrate preferred embodiments of the invention and, together with the detailed description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to understand the invention more fully,
reference is directed to the accompanying drawings, which is to
5 be taken in conjunction with the following description of the
invention and in which drawing:

FIG. 1A is a lateral, sectional, elevational view of a
cleaning fabric supply roll formed around a core;

10 FIG. 1B is a lateral, sectional, elevational view of a
cleaning fabric supply roll formed around a shaft;

FIG. 2 is a cross-sectional view of a soak on press
assembly according to the present invention including soaking the
cleaning fabric supply roll in solvent;

15 FIG. 3 is a cross-sectional view of a soak on press
assembly according to the present invention including a single
duct or container for storing solvent;

20 FIG. 4 is a cross-sectional view of a soak on press
assembly according to the present invention including separate
ducts for storing solvent to be applied and removed excess
solvent;

FIG. 5 is a cross-sectional view of a soak on press
assembly according to the present invention including a single
roller to dip and squeeze the strip of cleaning fabric;

25 FIG. 6 is a cross-sectional view of a soak on site
system according to the present invention;

FIG. 7 is a cross-sectional view of an alternate embodiment of a soak on site system according to the present invention including separate rollers for applying solvent and removing excess solvent;

5 FIG 7A is a cross-sectional view of an alternate embodiment of a soak on site system according to the present invention in which a same roller is used to both apply and remove solvent; and

10 FIG. 8 is a partial cross-sectional view of a cylinder to be cleaned and a soaked on site cleaning system according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

15 Referring now to FIGS. 1A and 1B, a cleaning fabric supply roll 10 used with the present invention is shown. One embodiment, shown in FIG. 1A comprises an elongated core 11 made from, for example, relatively heavy cardboard of sufficient strength so that it can support thereon a strip of cleaning
20 fabric 13. The strip of cleaning fabric 13 is wound around core 11. Alternatively, if desired, the core 11 can be made from any other suitable material including, but not limited to, plastic or metal, such as steel, aluminum, and the like. Core 11 preferably has open ends to allow installation on an appropriate cylinder
25 cleaning apparatus. Preferably, core 11 is completely hollow to allow a shaft, rod, or the like 15 to be inserted within core 11 to provide installation in the cylinder cleaning apparatus. In

such an embodiment, cleaning fabric supply roll 10 comprises core 11 and strip of cleaning fabric 13. In an alternate embodiment shown in FIG. 1B, cleaning fabric supply roll 10 is formed by winding the strip of cleaning fabric 13 directly around shaft 15.

5 Preferably, the core 11 and/or shaft 15 is cylindrical in shape. However, the core 11 and/or shaft 15 may be any other appropriate shape, such as having 3, 4, 5, or 6 sides or an oval. Such shapes are described in concurrently filed application entitled "MOUNTING MECHANISMS FOR CLOTH ROLLS ON PRESS CYLINDER CLEANING DEVICES," an application filed by applicant C. Robert Gasparrini and commonly assigned, hereby incorporated by reference.

10 The strip of cleaning fabric 11 from which the cleaning fabric supply roll 10 is made may vary widely. For example, it may be made of paper, cloth, film, a mixture of wood pulp and polyester, such as DuPont SONTARA, or any other suitable material. In those cases where a cloth fabric is employed, it may be a woven or non-woven cloth fabric made of synthetic or natural fibers or mixtures of the same. Exemplative, but not limitative, of suitable synthetic fibers which may be used in the cloth fabrics are polyester fibers, rayon fibers, nylon fibers, and acrylic fibers and the like. Exemplative, but not limitative, of the natural fibers which may be employed are cotton fibers, wood pulp fiber, hemp fibers and the like.

15 In those cases where paper is employed as the fabric material, paper fabrics made from wood pulp modified chemically in accordance with paper manufacturing technology are suitable.

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On the other hand, no matter what fabric is employed in carrying out the practice of this invention, it is preferred that the materials used therein exhibit high acceptability to being soaked or wetted by a solvent or cleaning agent. Preferably, this solvent or cleaning agent is a low volatility organic compound used to saturate the fabric. In this regard, it is preferred that the fabric employed be one which has a caliper thickness in a range from about 0.003 inches to about 0.030 inches, and preferably in a range from about 0.008 inches to about 0.020 inches, and the ability, when saturated with low volatility organic compound solvent, to retain from about 0.02 cc to about 0.5 cc of solvent per in² of fabric determined by routine testing methods.

In general, woven and non-woven fabrics suitable for use in carrying out the practice of the invention have a basic weight in a range of from about 1.5 ounces per square yard to about 6.0 ounces per square yard, a caliper thickness in the range mentioned above, a tensile strength in the longitudinal (machine) direction in a range of from about 20 lbs. per inch to about 200 lbs. per inch and in a width (cross) direction in a range from about 15 lbs. per inch to about 125 lbs. per inch.

When paper is employed as a cleaning fabric in the system of this invention, it preferably has a basis weight in a range of from about 40 lbs. to about 90 lbs., a caliper thickness in a range of from about 0.003 inches to about 0.10 inches, a tensile strength in the longitudinal (machine) direction in a

range of from about 20 lbs. per inch to about 80 lbs. per inch and in the width (cross) direction in a range of from about 15 lbs. per inch to about 50 lbs. per inch, a porosity in a range of from about 1.0 second to about 10 seconds when subjected to 100 cc of low volatility organic compound solvent or water, and a stretch ability in a range of from about 1.0 percent to about 6.0 percent all determined by routine testing methods.

The low volatility organic compound solvent 20 employed in carrying out the practice of this invention may vary widely and generally it includes at least one low vitality organic compound solvent which does not readily evaporate, as well as mixtures of the same with similar low volatile organic compound solvents or with normally volatile organic compound solvents. Exemplative, but not limitative, of suitable solvent materials of this type are organic compound solvents selected from vegetable oils and citrus oils and the like. Generally, such solvent materials have a volatility in a range of from about zero up to about 30.0 percent, and preferably a volatility in a range of from about zero percent to about 20.0 percent, determined by routine testing methods. It is to be understood that within the purview of this invention, such suitable solvents also include normally volatile organic compound solvents, that is, those which readily evaporate and which are selected from mineral spirits and aliphatic hydrocarbon solvents and the like. Such solvent materials generally have a volatility of from zero up to about 100 percent determined by routine testing methods. Preferably, a

low volatility solvent will be used because the lower the volatility of the solvent, the longer the fabric stays wet since less solvent evaporates. The closer the volatility is to zero percent, the longer the life of the presoaked fabric on the printing press cylinder cleaning apparatus

It is to be understood that within the context of this invention, the terminology "saturated to equilibrium" as it is used in connection with the saturation of the fabric and/or fabric roll with solvent means by measured absorption or after removing the excess solvent from the fabric and/or fabric roll, the fabric and/or fabric roll retains therein sufficient solvent or cleaning agent in an amount to wet the fabric to the extent that it imparts efficient cleaning ability to the fabric to clean cylinders of apparatus, such as printing machinery, and the fabric has preferably retained therein by measured absorption or after removal of the excess, if any removal is required, from about 0.02 cc to about 0.5 cc of solvent per in² of fabric.

The above described cleaning fabric supply roll 10 and low volatility, organic compound solvent 20 may be used in either a soak on press assembly or a soak on site system.

A soak on press assembly 1 is shown in FIG. 2. Soak on press assembly 1 is a cleaning apparatus mounted on a printing press (not shown) to prepare a strip of cleaning fabric to clean a cylinder 100. A mounting assembly 30 is affixed to the printing press and supports the soak on press assembly 1.

Mounting assembly 30 may be a unitary structure. Alternatively,

mounting assembly 30 may comprise several discrete pieces which are individually used to attach elements of the soak on press assembly 1 to the printing press. In yet a third embodiment, the mounting assembly 30 comprises those elements of a printing press which supports elements of the soak on press assembly 1.

Cleaning fabric supply roll 10 is preferably rotatably mounted to mounting assembly 1.

A container 42 is used to store solvent 20 while strip of cleaning fabric 13 is soaked and saturated in solvent 20. In one embodiment, the container 42 is in engagement with a mounting assembly 30. In an alternate, container 42 is placed in a duct 32 of mounting assembly 30. In another embodiment, container 42 is a duct 32 of mounting assembly 30. Preferably, container 42 is removably connected to mounting assembly 30 to allow container 42 to be easily cleaned and solvent 20 easily replaced.

Cleaning fabric supply roll 10 needs to be placed in contact with the solvent 20 so that strip of cleaning fabric 13 may be soaked and saturated. One method of achieving this result is to dip all cleaning fabric supply roll 10 into solvent 20 contained in container 42. For purposes of this invention, cleaning fabric supply roll 10 includes only the portion of strip of fabric 13 wrapped around core 11 and/or shaft 15 and not the portion of strip of cleaning fabric 13 threaded through the rest of the soak on press assembly 1. Preferably, cleaning fabric supply roll 10 is dipped in solvent 20 and strip of cleaning fabric 13 is soaked and saturated with solvent prior to any

portion of strip of cleaning fabric 13 being threaded through the rest of soak on press assembly 1. Alternatively, a portion of strip of cleaning fabric 13 may be unwound from cleaning fabric supply roll 10 prior to cleaning fabric supply roll 10 being brought in contact with the solvent 20. After the strip of cleaning fabric 13 of cleaning fabric supply roll 10 has been soaked and saturated, all of cleaning fabric supply roll 10 may remain in solvent 20, a portion of cleaning fabric supply roll 10 may be removed from solvent 20, or all of cleaning fabric supply roll 10 may be removed from solvent 20.

In an alternate embodiment, only a portion, but at least half, of cleaning fabric supply roll 10 is brought in contact with solvent 20 and remains in contact during operation of the printing press. The unwinding of cleaning fabric supply roll 10 causes cleaning fabric supply roll 10 to rotate and the strip of cleaning fabric 13 wrapped around core 11 and/or shaft 15 that was not in contact with the solvent 20 is placed in solvent 20 and allowed to soak and saturate.

In order for maximum efficiency, the strip of cleaning fabric 13 after it has been removed from cleaning fabric supply roll 10 should be in functional equilibrium with solvent 20. Preferably, this is achieved through measured absorption of solvent 20. Alternatively, excess solvent strip of cleaning fabric 13 can be removed by any appropriate means to obtain a strip of cleaning fabric 13 saturated to functional equilibrium with solvent 20.

One way of removing excess solvent from a strip of cleaning fabric 13 is to use a squeezer 50 to squeeze out excess solvent. In one embodiment, squeezer 50 may comprise at least a pair of rollers with a gap between them. The strip of cleaning fabric 13 is placed between the rollers and the excess solvent is squeezed from the strip of cleaning fabric 13. By controlling the size of the gap between the at least two rollers, the amount of excess solvent removed is controlled and regulated. In an alternate embodiment, squeezer 50 may comprise a squeezing roller 52, which is rotatably mounted, and a squeezing surface 54. Squeezing roller 52 is disposed so that it is not engaged with squeezing surface 54 and a gap is formed between squeezing surface 54 and squeezing roller 52. Squeezing roller 52 is preferably in a movably fixed relationship with squeezing surface 54 such that squeezing rollers 52 in its position to facilitate the removal of excess solvent yet may be moved to change the size of the gap between surface 54 and roller 52 to control and regulate the amount of solvent being removed from the strip of cleaning fabric 13. If squeezing roller 52 is movably mounted, it may be placed adjacent to squeezing surface 54.

As with container 42, container 44 may be engaged with mounting assembly 30, may be placed within a duct 34 of mounting assembly 30, may be duct 34 of mounting assembly 30, or any combination of the above. Additionally, any other type of container 44 may be used. Preferably, surface 54 is an element

of container 44. Alternatively, squeezing surface 54 may be a surface of mounting assembly 30.

It is preferred that after the removal of excess solvent, the strip of cleaning fabric 13 is saturated to functional equilibrium with solvent. A cylinder cleaning means is used to bring the strip of cleaning fabric 13 in contact with a cylinder to be cleaned and causes the cylinder 100 to be cleaned. Examples of cylinder cleaning means can be found in United States Patent Application 07/955,694 filed October 2, 1992 by Harold W. Gegenheimer et al. entitled "AUTOMATIC CLEANING SYSTEM FOR PRESS ROLLERS AND CYLINDERS", United States Patent No. 4,867,064 issued September 19, 1989 to Hara et al. entitled "APPARATUS FOR CLEANING A PRINTING CYLINDER", and United States Patent No. 5,150,653 issued September 29, 1992 to Hara entitled "METHOD OF AND APPARATUS FOR CLEANING A CYLINDER", all of which are hereby, incorporated by reference.

After being used to clean cylinder 100, the used portion of the strip of cleaning cloth 13 is taken up by a take-up means 70. Preferably, take-up means 70 is a take-up shaft 72 rotatably mounted to mounting assembly 70. A take-up roll is formed by winding the used strip of cleaning fabric 13 around the take-up shaft 72. Examples of take-up shaft 72 can be found in concurrently filed application entitled "MOUNTING MECHANISMS FOR CLOTH ROLLS ON PRESS CYLINDER CLEANING DEVICES," an application filed by applicant C. Robert Gasparrini and commonly assigned, hereby incorporated by reference.

FIG. 3 demonstrates an alternate embodiment of the invention. In this embodiment, cleaning cloth supply roll 10 is not soaked and saturated in solvent 20. Instead, the strip of cleaning fabric 13 is at least partially removed from the cleaning cloth supply roll 10. A soaking means 80 is used for soaking and saturating at least a portion of the strip of cleaning fabric 13 in solvent 20. In this embodiment, the soaking means 80 includes a dipper 82 and a container 42. Container 42 is used to store the solvent while dipper 82 is placed at least partially in the solvent 20. Dipper 82 is used to place the at least a portion of the strip of cleaning fabric 13 in solvent 20 and to allow the strip of cleaning fabric 13 to soak and saturate in the solvent 20. Preferably, dipper 82 is a roller rotatably mounted to the mounting assembly; however, any appropriate dipper may be used. The remainder of the soak on press assembly 1 functions the same as that described for the device shown in FIG. 2.

An improved embodiment of the invention is shown in FIG. 4. In this embodiment, instead of having a solvent storage container 42 and a removed excess solvent storage container 44, only a single storage container 46 is used. Because the removed excess solvent can be used immediately without the need to move it from one container 44 to a second container 42, the soak on press assembly 1 can be operated for a longer period of time before the container needs to be cleaned and/or refilled.

As with containers 42 and 44, container 46 may be constructed in a variety of fashions. For example, container 46 may be fixed, either permanently or, preferably, removably, to mounting assembly 30. Container 46 may be placed or fixed within a duct 36 of mounting assembly 30. Alternatively, duct 36 may be used at the container. On the other hand, any combination of the above may be used. For example, container 46 may comprise a container placed within a duct and having the duct extend beyond the container. Alternatively, any other appropriate construction of container 46 may be used.

In another embodiment, multiple containers 46 are used. In each of these containers 46, the strip of cleaning fabric 13 is both soaked and saturated with solvent 20 and excess solvent is removed from the soaked and saturated strip of cleaning fabric 13.

Figure 5 an improvement to the single container embodiment described above, a single body 90 is used to both dip the strip of cleaning fabric into solvent 20 stored in container 46 to allow the strip of cleaning fabric 13 to soak and saturate in the solvent and to remove the excess solvent by squeezing the soaked and saturated strip of cleaning fabric 13 between the body 90 and squeezing surface 54. Preferably, body 90 is a roller which is rotatably mounted to mounting assembly 30. In this embodiment, body 90 may be mounted to allow movement relative to surface 54 to control and regulate the amount of excess solvent being removed.

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An alternate approach to achieving the advantages of the invention is to presoak the strip of cleaning cloth 13 on site, that is near enough to the press that the presoaked cleaning cloth can be brought to or in the proximity of the press containing the cylinder to be cleaned without disposing a sealed and/or heat-sealed plastic sleeve about the cleaning fabric roll 10 and without substantially disturbing the distribution of the solvent in the fabric roll and detrimentally affecting the cleaning ability of the fabric.

In accordance with a method of this invention, a strip of cleaning fabric 13 is brought in contact with a low viscosity, organic compound solvent which does not readily evaporate at ambient pressure and temperature. Contact between the strip of cleaning fabric 13 and the solvent 20 may be achieved in a variety of ways. For example, solvent may be applied in measured amounts so that the fabric is presoaked to functional equilibrium. This preferred method of applying solvent is known as measured absorption of a solvent. If desired, instead of measured absorption, an excess amount of solvent may be applied to the strip of cleaning fabric. This may be done by soaking and saturating the strip of cleaning fabric in a vat of solvent. If this is done, the excess solvent must be removed to obtain a strip of cleaning fabric saturated to functional equilibrium with the solvent. Any appropriate method for removing the excess solvent to obtain a strip of cleaning fabric saturated to functional equilibrium can be used with any of the above methods

of contacting, including draining the strip of cleaning fabric or spinning the strip of cleaning fabric. The strip of cleaning fabric is presoaked and saturated with a low volatility, organic compound solvent before or after the strip of cleaning fabric 13 is wound to form a cleaning fabric supply roll 10.

An alternative embodiment of a method of presoaking a strip of cleaning fabric on site is shown in FIG. 6. A strip of cleaning fabric 13 is initially wound around a shaft or core 115 to form bulk roll 110. Bulk roll 110 is rotatably mounted to a roll forming assembly. The amount of fabric on bulk roll 110 may be sufficient to form multiple cleaning fabric rolls 10. A portion of the strip of cleaning fabric 13 is unwound from bulk roll 110. If desired, at least a pair of calendering rollers 150 may be used to calender the strip of cleaning fabric 13. The at least a pair of calendering rollers 150 compress the strip of cleaning fabric 13. Preferably, but not necessarily, the temperature of the at least a pair of rollers 150 is hotter than room temperature. Alternatively, the temperature of the at least a pair of rollers 150 is at about ambient temperature or less than ambient temperature. It has been found that the wettability and the distribution of the solvent is very good in the calenderized fabric.

A surprising and unexpected result of the calendaring process is that the length of fabric is increased while not increasing the diameter of the cleaning fabric supply roll 10. This provides an important advantage because cleaners are

designed to accept fabric rolls of up to a certain diameter. For example, one of the assignor's automatic blanket cleaners will only accept a cleaning fabric roll having a diameter of about 2.75 inches. Because of this extra length, a fabric roll of calenderized cloth will be usable for more washes than a regular fabric roll of the same fabric having the same diameter. This has two advantages. First, the cost per wash will be reduced. Second, the pressmen need not change a roll of cleaning fabric as often since there are more washes per roll of cloth. This will allow for the press to be run more often. These advantages can be realized regardless of whether the fabric is pre-soaked and/or pre-packaged.

The amount of increase in the length of cloth due to calendaring is dependent on the fabric used and the amount of calendaring. For example when DuPont SONTARA cloth having a thickness of about .012 inches and a length of about 12 yards is placed about a core, having a diameter of about 1.5 inches, the fabric roll has a diameter of 2.75 inches. After being calendered the cloth has a thickness of about 0.0085 inches and a length of about 16 yards and still has a diameter of about 2.75 inches when placed on the same core. Thus, in this situation, calendaring results in an about 25% to about 30% increase in the length of the fabric without increasing the diameter of cleaning fabric supply roll 10. Depending on the type of fabric and amount of calendaring, results may range from about a 10% increase to about a 50% increase.

Calendaring fabric and its advantages are discussed in more detail in the United States Patent Application by C. Robert Gasparini and Walter H. Cano entitled "CLEANING SYSTEM AND PROCESS FOR MAKING SAME EMPLOYING REDUCED AIR CLEANING FABRIC"

5 filed concurrently herewith and hereby incorporated by reference.

A solvent application system 120 is used to apply a measured amount of solvent 20 to the strip of cleaning fabric 13. A container 122 is used to store solvent 20. A solvent supply roller 124, which is rotatably mounted, is partially submerged in solvent 20. A rotatably mounted application roller 126 is positioned adjacent to and in contact with the solvent supply roller 124 at a portion of the solvent supply roller 124 which is not submerged in the solvent 20. Solvent supply roller 124 and application roller 126 are rotatably mounted such that they rotate in the opposite direction. The rotation of solvent supply roller 124 and application roller 126 cause solvent 20 to transfer from solvent supply roller 124 to application roller 126 via nip 125. If desired, a plurality of solvent supply rollers 126 may be used to transport solvent 20 from container 122 to the application roller 126. In such an embodiment, the plurality of solvent supply rollers 124 are adjacent to and in contact with each other to form a chain of rollers such that one solvent supply roller 124 is submerged in solvent 20 and another solvent supply roller 124 is in contact and adjacent to application roller 126. The strip of cleaning fabric 13 is placed between and adjacent to a rotating roller 128 and application roller 126.

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The rotation application roller 126 causes a measured amount of solvent 20 to be placed in contact with the strip of cleaning fabric 13 and allowing the fabric 13 to be soaked and saturated with the solvent 20. Preferably, the strip of cleaning fabric 13 is soaked and saturated to functional equilibrium with the solvent 20. Alternatively, an excess amount of solvent may be used to soak and saturate the strip of cleaning fabric 13. Such excess solvent can be removed by any appropriate means including, but not limited to, running the strip of fabric 13 through at least a pair of rollers 160. The soaked and saturated strip of cleaning fabric 13 is then wound around a core, shaft or any other appropriate body to form a cleaning fabric supply roll 10. The excess solvent, if any is applied to the fabric, may be removed either before or after the cleaning fabric supply roll 10 is formed. When a cleaning fabric supply roll 10 of an appropriate diameter is formed, the strip of cleaning fabric 13 is cut or torn, cleaning fabric supply roll 10 is removed, and a new shaft or core is used to form another cleaning fabric supply roll.

In the above described system, the winding of the strip of cleaning fabric 13 into a cleaning fabric supply roll 10 may cause the strip of cleaning fabric 13 to move through the solvent application system 120, the at least a pair of calendering rollers 150 (if used) and the pair of rollers 160 (if used).

The solvent application system 120 including all its elements, calendaring rollers 150, pair of rollers 160, and

cleaning fabric supply roll 10 may all be attached to a roll forming assembly.

A soak on site system using an alternate solvent application system 170 is shown in FIG. 7. At least one placement device 174, preferably a roller, is used to place the strip of cleaning fabric 13 above a container 172 storing a low volatility, organic compound solvent 20 which does not readily evaporate at ambient pressure and temperature. A dipper 176, preferably a rotatably mounted roller, is used to dip the strip of cleaning fabric 13 into the solvent 20. This allows the strip of cleaning fabric 13 to soak and saturate in the solvent 20. Preferably, the strip of cleaning fabric 13 is soaked and saturated to functional equilibrium with solvent when it is removed from solvent 20. If not, the excess solvent must be removed. Any appropriate method for removing excess solvent may be used. Preferably, the excess solvent is removed by squeezing the strip of cleaning fabric 13 between a pair of rollers 160.

Yet another possible embodiment is shown in figure 7A. In this embodiment, the solvent application system 180 includes a container 182 a dipping roller 184 and a squeezing roller 186. Solvent or cleaning agent 20 is stored in container 182. The dipping roller 184 is used to dip the strip of cleaning fabric 13 into the solvent or cleaning agent 20. The strip of cleaning fabric 13 is soaked and saturated in the solvent or cleaning agent 20. The strip of cleaning fabric 13 is then removed from the solvent and the excess solvent is removed from the strip of

cleaning fabric 13 so that it is saturated to functional equilibrium with the solvent 20. This removal may be accomplished by squeezing the strip of cleaning fabric 13 between dipping roller 184 and squeezing roller 184 at a point above solvent 20. An advantage of such a system is that the removed excess solvent will drop into container 182 and thus a separate container for the removed excess solvent will not be required.

Also shown in figure 7A is a positioner 190. Positioner 190 is preferably a roller. Positioner 190 may be used to properly position the strip of cleaning fabric 13 is presoaked. Although positioner 190 is only shown in figure 7A, a positioner may be used in any embodiment of the invention. Positioners may also be used in the soak on press systems described earlier.

It should be noted that the embodiments shown in figures 6, 7, and 7A do not need to have rolls 150 installed. If rolls 150 are not installed, standard uncalendered fabric is used and less solvent stability is obtained.

After being presoaked on site, the cleaning fabric supply roll 10 having a strip of cleaning fabric 13 is then placed on a printing press having a cylinder 100 to be cleaned.

The printing press further includes a means for properly positioning the cleaning fabric to allow cleaning of the cylinder 100. Several ways exist for this result to be achieved. For example, the cleaning fabric 13 may be positioned so that it is adjacent the cylinder 100 to be cleaned. In another example,

the cleaning fabric 13 may be adjacent to and operatively associated with the cylinder 100 to be cleaned. In yet another possible embodiment, the cleaning fabric 13 is operatively associated with the cylinder 100 to allow cleaning the cylinder 100 as the fabric 13 is fed past the cylinder 100. One possible arrangement is shown in Fig. 8. The person of ordinary skill in the art will be aware of many other configurations that will work for the invention's intended purpose without undue experimentation. These examples are merely exemplary and are not meant to limit how the invention may be used.

A distinct advantage of the cleaning system of this invention is that it eliminates the need for complex apparatus, such as pumps, spray bars, manifold lines, valves and the like, especially as part of the automatic blanket cleaning systems used on printing machinery to introduce cleansing solvents or solutions to the cleaning fabric just prior to use.

In addition, the cleaning system of this invention provides numerous other advantages. For example, it is relatively simple in construction, employs readily available materials, and can be made in a relatively simple and forward manner without resort to highly complex and expensive procedures which necessitate the use of elaborate machinery. Additionally, the invention is preferable to the invention discussed in U.S. Patent No. 5,368,157 to Gasparrini et al. in that it provides for less solvent displacement during storage and thus less of a change in the fabric roll's center of gravity. Numerous other

advantages of this invention will be readily apparent to those skilled in the art.

It will remain understood by those skilled in the art that the present invention in its broader aspects is not limited to the particular embodiments shown and described herein, and that variations may be made which are within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

We claim:

1 1. A method of cleaning a cylinder of a printing
2 press comprising:

3 (a) first, placing a cleaning fabric supply roll
4 having a strip of cleaning fabric in a cylinder cleaning system;

5 (b) second, contacting said strip of cleaning
6 fabric with a low volatility, organic compound solvent which does
7 not evaporate readily at ambient temperature and pressure and
8 soaking and saturating said strip of cleaning fabric with said
9 solvent; and

10 (c) third, cleaning said cylinder with said
11 saturated strip of cleaning fabric.

1 2. The method as defined in claim 1 further
2 comprising the step of winding said used strip of cleaning fabric
3 on a take-up shaft.

1 3. The method as defined in claim 1 wherein said
2 strip of cleaning fabric is in contact with said solvent until
3 said strip of cleaning fabric absorbs a measured amount of said
4 solvent such that said strip of cleaning fabric is saturated to
5 functional equilibrium with said solvent.

1 4. The method as defined in claim 3 further
2 comprising the step of removing said cleaning fabric supply roll
3 from said container containing said solvent.

1 5. The method as defined in claim 1 further
2 comprising between steps two and three the step of removing

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3 excess solvent from said saturated strip of cleaning fabric to
4 obtain a strip of cleaning fabric saturated to functional
5 equilibrium.

1 6. The method as defined in claim 5 wherein said step
2 of contacting said strip of cleaning fabric comprises dipping
3 only a portion of said cleaning fabric supply roll in a container
4 containing said solvent and rotating said cleaning fabric supply
5 roll in said container to allow at least substantially all of
6 said strip of cleaning fabric to be brought in contact with said
7 solvent prior to being unwound from said cleaning fabric supply
8 roll.

1 7. The method as defined in claim 5 further
2 comprising the step of unwinding, said strip of cleaning fabric
3 from said cleaning fabric supply roll prior to bringing said
4 strip of cleaning fabric in contact with said solvent.

1 8. The method as defined in claim 7 wherein said step
2 of contacting said strip of cleaning fabric with said solvent
3 comprises dipping said unwound strip of cleaning fabric through a
4 container containing said solvent.

1 9. The method as defined in claim 8 wherein said step
2 of removing said excess solvent comprises squeezing said excess
3 solvent from said strip of cleaning fabric.

1 10. The method as defined in claim 8 further
2 comprising the step of storing said removed excess solvent in
3 said container.

11. The method as defined in claim 8 further comprising the step of storing said removed excess solvent in a separate excess solvent container.

12. The method as defined in claim 8 wherein said contacting step comprises using a dipping roller to dip said strip of cleaning fabric into a container containing said solvent.

13. The method as defined by claim 12 wherein said removal step comprises using a squeezing roller and a side of said container to squeeze said strip of cleaning fabric.

14. The method as defined by claim 13 wherein a single roller is used to dip said strip of cleaning fabric and squeeze said strip of cleaning fabric against said a surface of said container.

15. The method as defined by claim 13 further comprising the step of adjusting the gap between said squeezing roller and said side of said container to control the amount of said solvent in said strip of fabric cloth.

16. The method as defined in claim 1 further comprising the step of unwinding, said strip of cleaning fabric from said cleaning fabric supply roll prior to bringing said strip of cleaning fabric in contact with said solvent.

17. The method as defined in claim 1 wherein said step of contacting said strip of cleaning fabric comprises dipping at least substantially all of said cleaning fabric supply roll in a container containing said solvent.

1 18. A soak on press assembly for use in a printing
2 press cylinder cleaning system for cleaning a cylinder
3 comprising:

4 (a) a low volatility, organic compound solvent
5 which does not evaporate readily at ambient temperature and
6 pressure;

7 (b) soaking means for soaking and saturating at
8 least a portion of said strip of cleaning fabric;

9 (c) removal means for removing excess solvent
10 from said strip of cleaning fabric and obtaining a strip of
11 cleaning fabric saturated to functional equilibrium with solvent;

12 (d) cylinder cleaning means for bringing said
13 saturated to equilibrium strip of cleaning fabric into contact
14 with said cylinder and cleaning said cylinder; and

15 (e) take-up means for collecting said strip of
16 cleaning fabric after it has been used to clean said cylinder.

1 19. The soak on press assembly as defined by claim 18
2 wherein said soaking means comprises a container containing said
3 solvent, at least a portion of said cleaning cloth supply roll
4 dipped in said solvent.

1 20. The soak on press assembly as defined by claim 19
2 in which said soaking means further comprises rotating means for
3 rotating said cleaning fabric supply roll to allow said strip of
4 cleaning fabric to be soaked and saturated.

1 21. The soak on press assembly as defined by claim 19
2 further comprising means for removing said cleaning cloth supply
3 roll from said solvent.

1 22. A soak on press assembly as defined in claim 18
2 wherein said soaking means comprises a container containing said
3 solvent, said solvent filled container not in contact with said
4 cleaning fabric supply roll.

1 23. A soak on press assembly as defined in claim 22
2 wherein said soaking means further comprises a dipping means for
3 placing said strip of cleaning fabric into said solvent stored in
4 said solvent storage means to soak and saturate said strip of
5 cleaning fabric.

1 24. The soak on press assembly as defined by claim 23
2 wherein said removal means comprises a squeezing means for
3 squeezing excess solvent from said strip of cleaning fabric.

1 25. The soak on press assembly as defined by claim 24
2 wherein said squeezing means and said dipping means comprise a
3 unitary structure.

1 26. A soak on press assembly for use in a printing
2 press cylinder cleaning system comprising:

3 (a) a mounting assembly affixed to said printing
4 press to support said soak on press assembly;

5 (b) a cleaning cloth supply roll comprising a
6 strip of cleaning fabric;

7 (c) at least one container, said container placed
8 in contact with said mounting means;

9 (d) a low volatility, organic compound solvent
10 which does not evaporate readily at ambient temperature and
11 pressure, said solvent located in said at least one container and
12 at least a portion of said cleaning cloth supply roll placed
13 within said solvent to soak and saturate said strip of cleaning
14 fabric;

15 (e) at least one squeezing roller operatively
16 associated with said strip of cleaning fabric for removing excess
17 solvent from said strip of cleaning fabric to obtain a strip of
18 cleaning fabric saturated to functional equilibrium with said
19 solvent;

20 (f) a cylinder cleaning means for bringing said
21 saturated to functional equilibrium strip of cleaning fabric into
22 contact with said cylinder to be cleaned and cleaning said
23 cylinder; and

24 (g) a take-up roll means for collecting said
25 strip of cleaning fabric.

1 27. The soak on press assembly as defined in claim 26
2 wherein said at least one squeezing roller and said strip of
3 cleaning fabric are operatively associated with said ^{Container} cylinder to
4 remove excess solvent from said strip of cleaning fabric by
5 squeezing said strip of cleaning fabric between said at least one
6 squeezing roller and a surface of said container.

1 28. The soak on press assembly as defined in claim 27
2 wherein said squeezing roller is in a movedly fixed relationship
3 with said container for adjusting the distance between said

4 squeezing roller and said surface of said container to control
5 the amount of solvent in said strip of cleaning fabric.

1 29. A soak on press assembly for use in a printing
2 press cylinder cleaner comprising:

3 (a) a mounting assembly affixed to said printing
4 press for supporting said soak on press assembly;

5 (b) a cleaning fabric supply roll comprising a
6 strip of cleaning fabric, said cleaning fabric supply roll
7 rotatably mounted on said mounting assembly;

8 (c) at least one container;

9 (d) a low volatility, organic compound solvent
10 which does not evaporate readily at ambient temperature and
11 pressure, said solvent located in said at least one container;

12 (e) a dipper at least partially submerged in said
13 solvent, said strip of cleaning fabric adjacent to said dipper so
14 that said strip of cleaning fabric is soaked and saturated in
15 said solvent;

16 (f) a squeezer, said strip of cleaning fabric
17 located within a gap between said squeezer and a surface of said
18 container and in contact with said squeezer and said surface of
19 said container so that said strip of cleaning fabric is squeezed
20 and said excess solvent is removed from saturated cleaning fabric
21 and placed in said at least one container and a strip of cleaning
22 fabric saturated to functional equilibrium is obtained;

23 (g) cylinder cleaning means for bringing said
24 strip of cleaning fabric into contact with said cylinder to be
25 cleaned and cleaning said cylinder; and

26 (h) take-up means for collecting said strip of
27 cleaning fabric.

1 30. The soak on press assembly as defined by claim 29
2 wherein said at least one container is a single container.

1 31. The soak on press assembly as defined by claim 30
2 wherein said dipper and said squeezer consists of a said roller.

1 32. The soak on press assembly as defined by claim 29
2 wherein said squeezer comprises a roller.

1 33. The soak on press assembly as defined by claim 29
2 wherein said dipper comprises a roller.

1 34. The soak on press assembly as defined by claim 29
2 wherein said squeezer is in a movedly fixed relation with said
3 surface of said container so that the size of said gap between
4 said squeezer and said surface of said container may be changed
5 so that the amount of solvent in said strip of cleaning fabric
6 may be adjusted.

1 35. A method of presoaking cloth for a cleaning system
2 on site comprising:

3 (a) contacting a strip of cleaning fabric with a
4 low volatility, organic compound solvent which does not evaporate
5 readily at ambient temperature and pressure and soaking and
6 saturating said strip of cleaning fabric with said solvent; and

7 (b) wrapping said strip of cleaning fabric to
8 form a cleaning fabric supply roll; and

9 (c) engaging said saturated cleaning fabric
10 supply roll with a printing press having a cylinder to be cleaned
11 without disposing a heat-sealed plastic sleeve about said fabric
12 roll and without substantially disturbing the distribution of
13 said solvent in said fabric roll and detrimentally affecting the
14 cleaning ability of the fabric.

1 36. The method as defined in claim 35 further
2 comprising the step of removing excess solvent and obtaining a
3 fabric saturated to functional equilibrium.

1 37. The method as defined in claim 36 wherein the step
2 of removing said excess solvent comprises squeezing said strip of
3 cleaning fabric between at least a pair of squeezing rollers.

1 38. The method as defined in claim 36 wherein said
2 steps of contacting and removing are performed after said
3 wrapping step.

1 39. The method as defined in claim 36 wherein said
2 contacting and removing steps are performed prior to said
3 wrapping step.

1 40. The method as defined in claim 39 wherein said
2 contacting step comprises running said strip of cleaning fabric
3 through a container filled with said solvent.

1 41. The method is defined in claim 36 wherein said
2 contacting step is performed by using a dipper to dip the strip
3 of cleaning fabric into a container holding said solvent and said

removing step comprises squeezing said strip of cleaning fabric between said dipper and a squeezer.

42. The method is defined in claim 41 wherein said dipper is a roller and said squeezer is a roller.

43. The method is defined in claim 35 wherein said contacting step comprises contacting said strip of cleaning fabric with a measured amount of solvent whereby after absorption of said solvent, said strip of cleaning fabric is in functional equilibrium.

44. A method for presoaking a cleaning fabric on site comprising:

(a) unwinding a strip of cleaning fabric from a bulk roll;

(b) applying a low volatility, organic compound solvent which does not evaporate readily at ambient pressure and temperature to at least one roller;

(c) contacting said unwound strip of cleaning fabric to said at least one roller to soak and saturate said strip of cleaning fabric with solvent;

(d) winding said soaked and saturated strip of cleaning fabric into a cleaning fabric supply roll.

45. The method as defined in claim 44 further comprising removing excess solvent from said saturated fabric and obtaining a fabric saturated to functional equilibrium with solvent.

1 46. A device for soaking a strip of cleaning fabric on
2 site comprising:

3 (a) means for mounting a bulk supply roll having
4 said strip of cleaning fabric wound around a shaft;

5 (b) solvent applying means for applying a low
6 volatility, organic compound solvent which does not readily
7 evaporate at ambient pressure and temperature to said strip of
8 cleaning fabric; and

9 (c) means for forming a cleaning fabric supply
10 roll.

1 47. The device for soaking a strip of cleaning fabric
2 on site as defined by claim 46 further comprising calendaring
3 means for reducing the thickness and increasing the length of
4 said strip of cleaning fabric on said shaft without substantially
5 increasing the diameter of said cleaning fabric supply roll.

1 48. The device for soaking a strip of cleaning fabric
2 on site as defined by claim 46 further comprising an excess
3 solvent removing means for obtaining a strip of cleaning fabric
4 saturated to functional equilibrium with said solvent.

1 49. The device for soaking a strip of cleaning fabric
2 on site as defined by claim 46 further comprising a squeezer
3 operatively associated with said solvent applying means to
4 squeeze said strip of cleaning fabric between said solvent
5 applying means and said squeezer.

1 50. The device for soaking a strip of cleaning fabric
2 on site as defined by claim 49 wherein said solvent applying

- 3 means comprises at least one roller and said squeezer comprises
4 at least one roller.

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ABSTRACT

1 An improved method and system for cleaning a cylinder
2 of a printing press. One method involves soaking a strip of
3 cleaning fabric on a press with a low volatility organic compound
4 solvent. Excess solvent, if any, is removed to place the strip
5 of cleaning fabric in functional equilibrium with the solvent.
6 The cleaning fabric is then used to clean a cylinder.
7 Alternatively, the strip of cleaning fabric is soaked on site by
8 contacting the strip of cleaning fabric with the solvent and
9 wrapping the strip of cleaning fabric into a cleaning fabric
10 supply roll. The cleaning fabric is then brought in engagement
11 with a printing press having a cylinder to be cleaned without
12 disposing a sleeve around the fabric roll and without
13 substantially disturbing the distribution of the solvent in the
14 fabric roll and detrimentally affecting the cleaning ability of
15 the fabric.
16

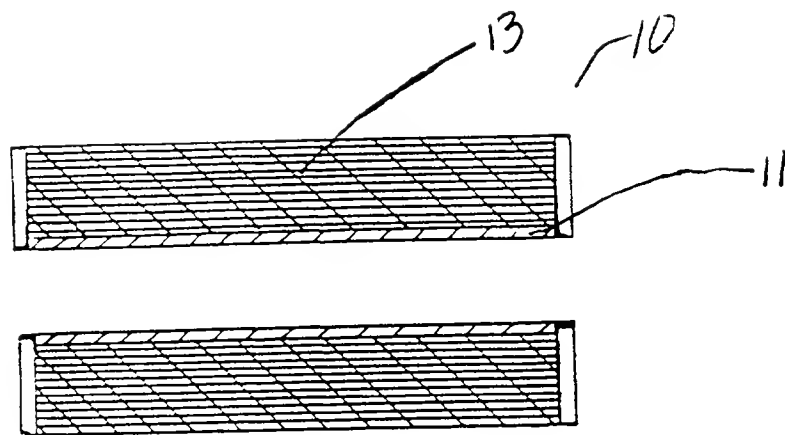


FIG. 1A

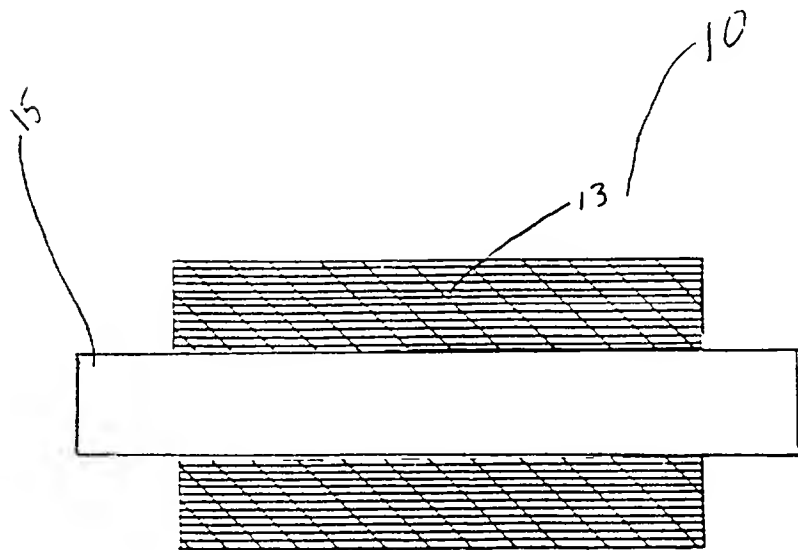


FIG. 1B

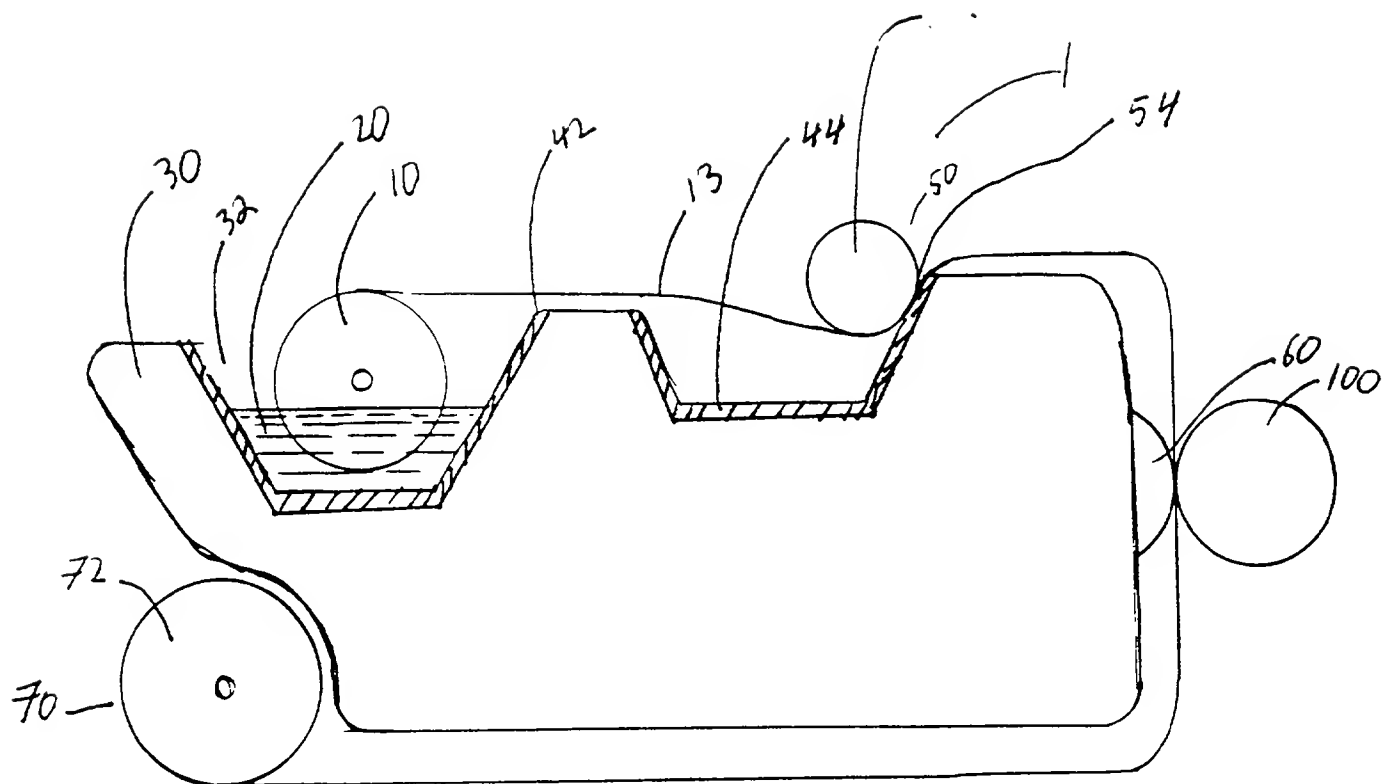


FIG. 2

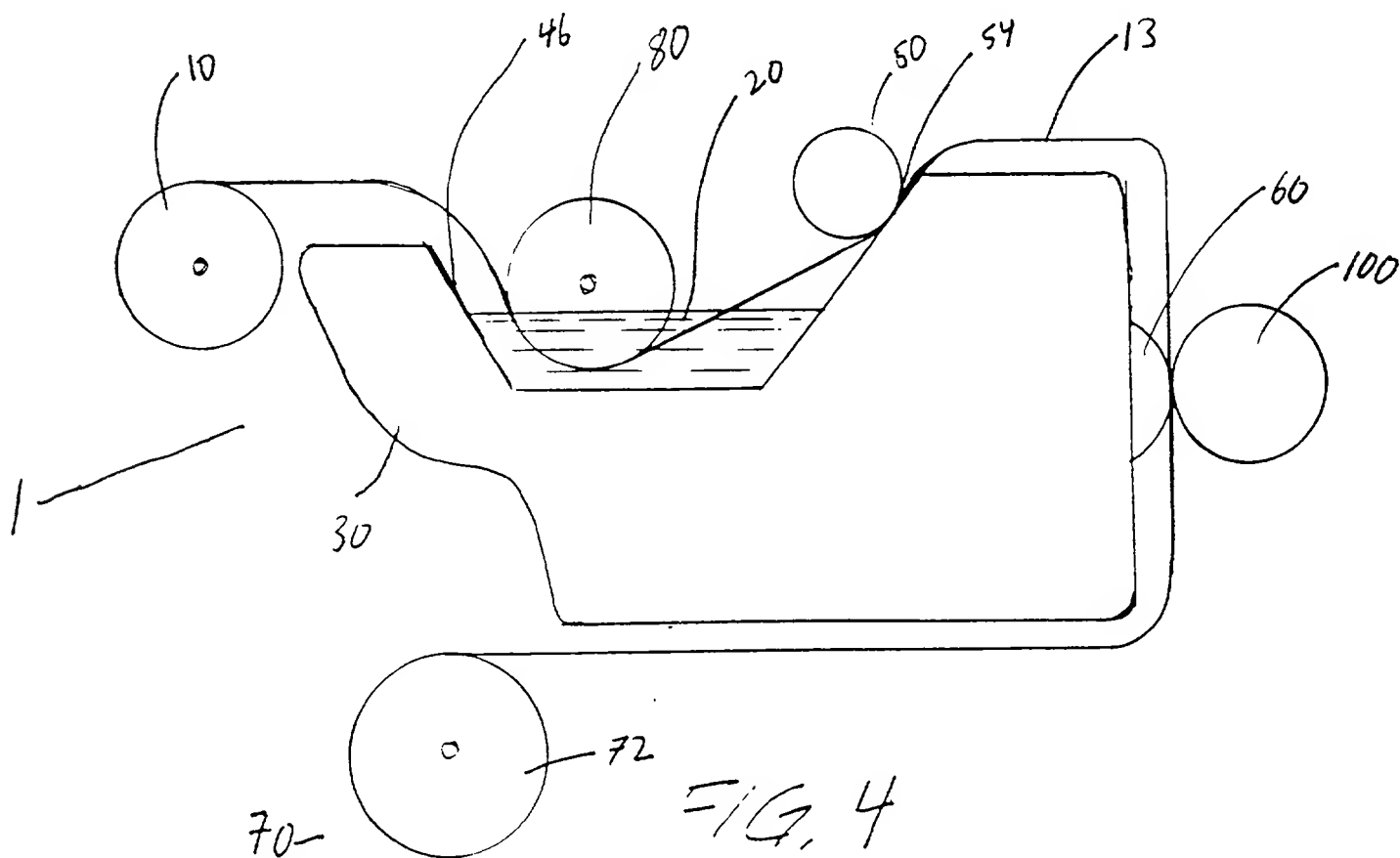


FIG. 4

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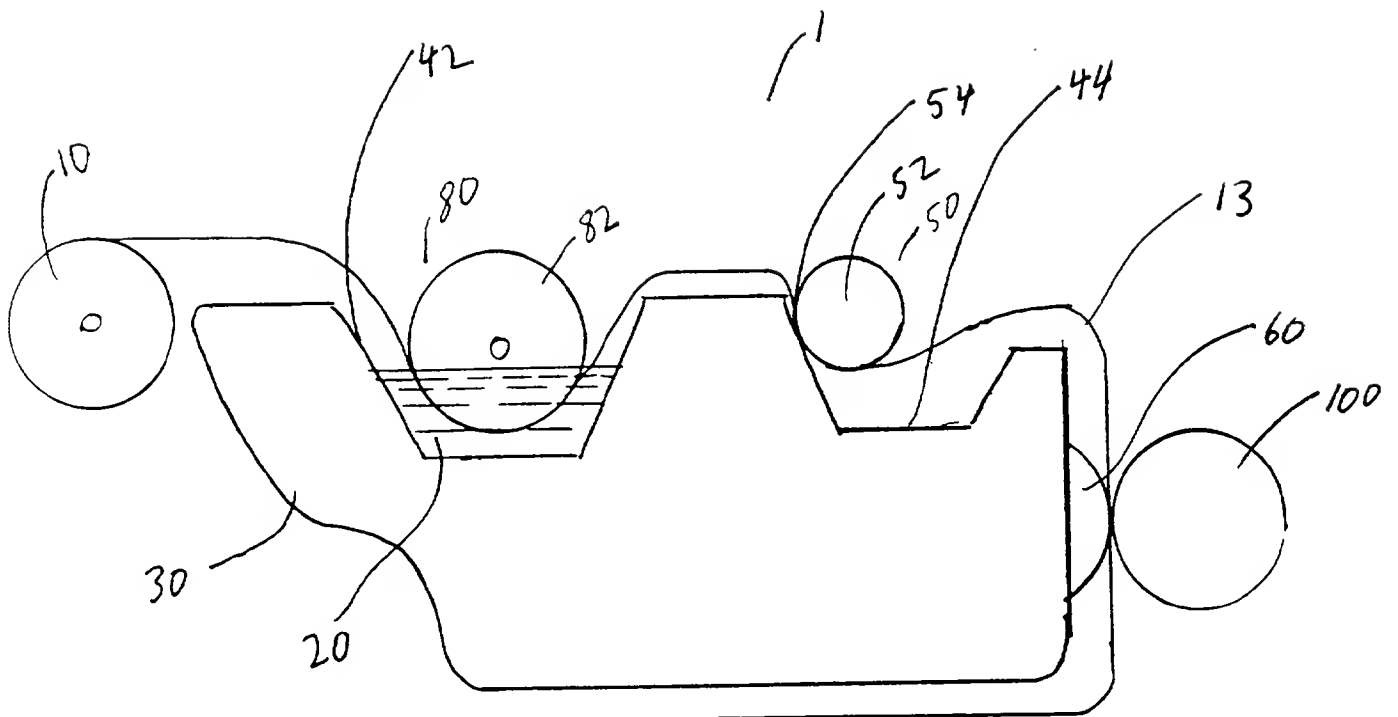


FIG. 3

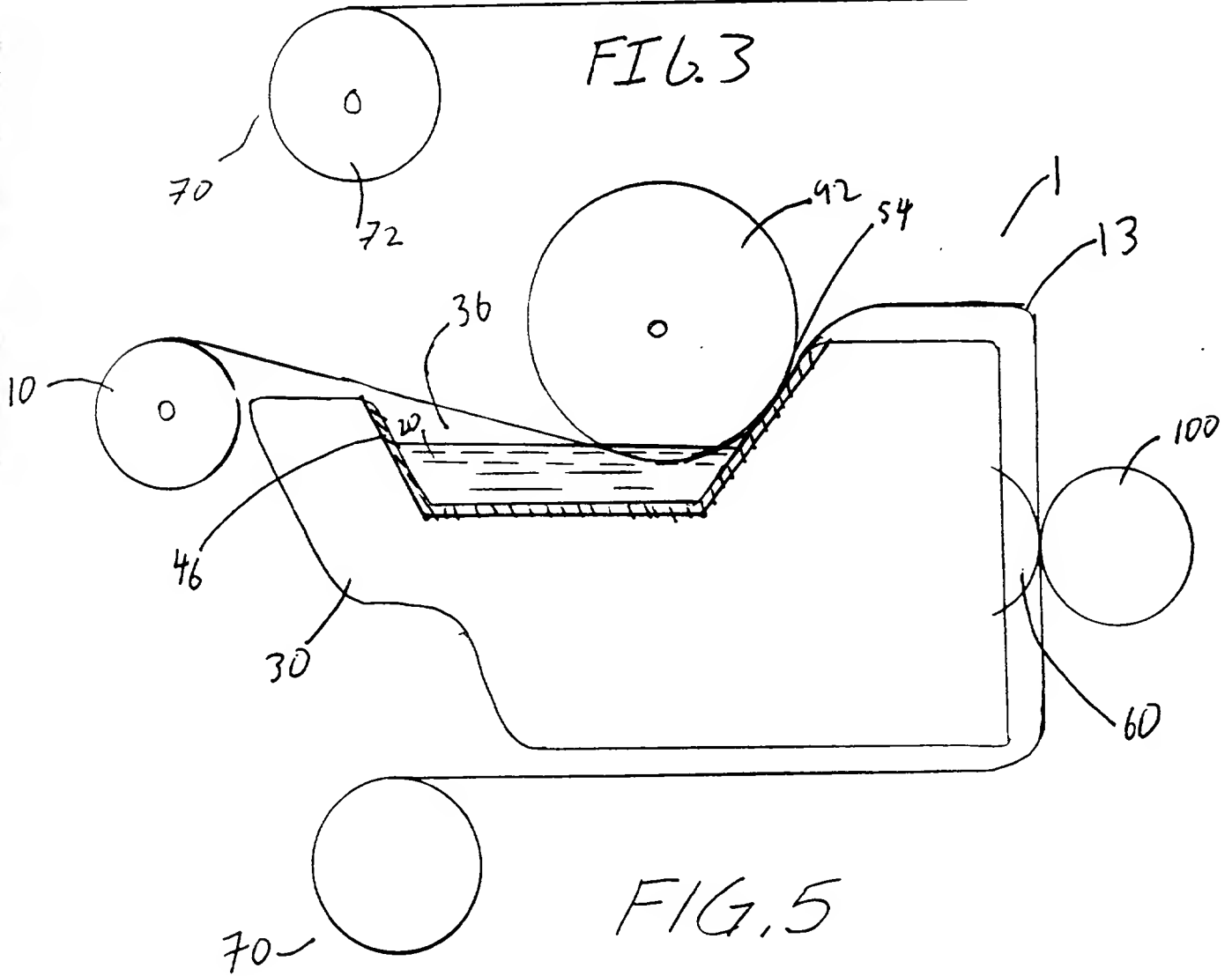


FIG. 5

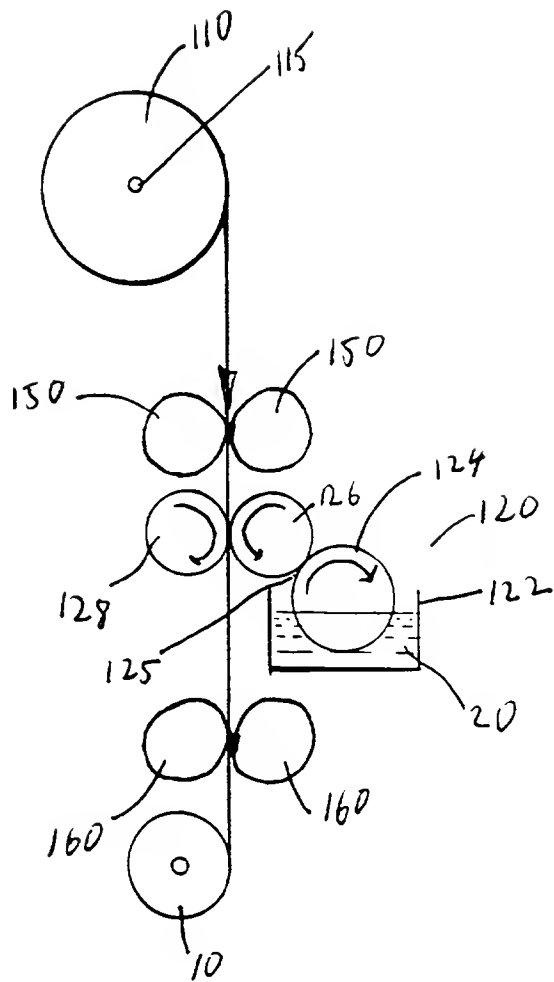


FIG. 6

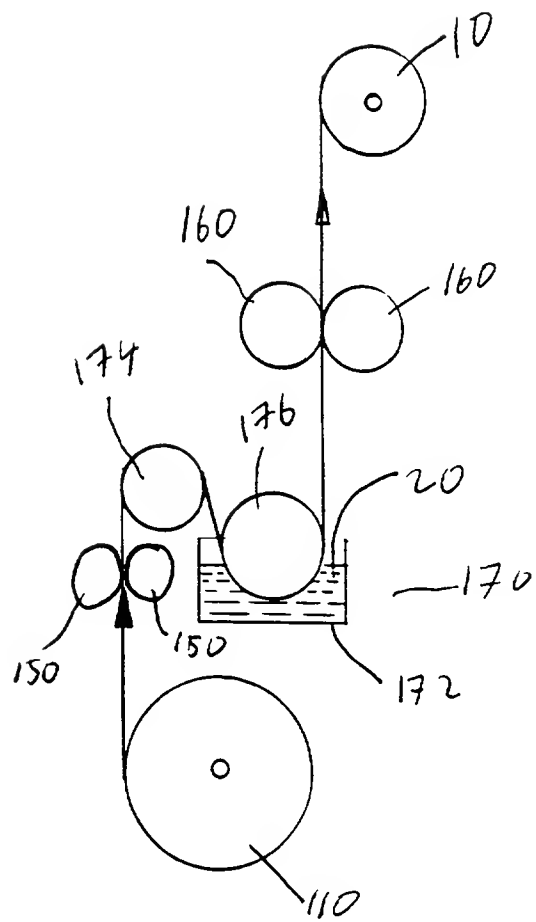


FIG. 7

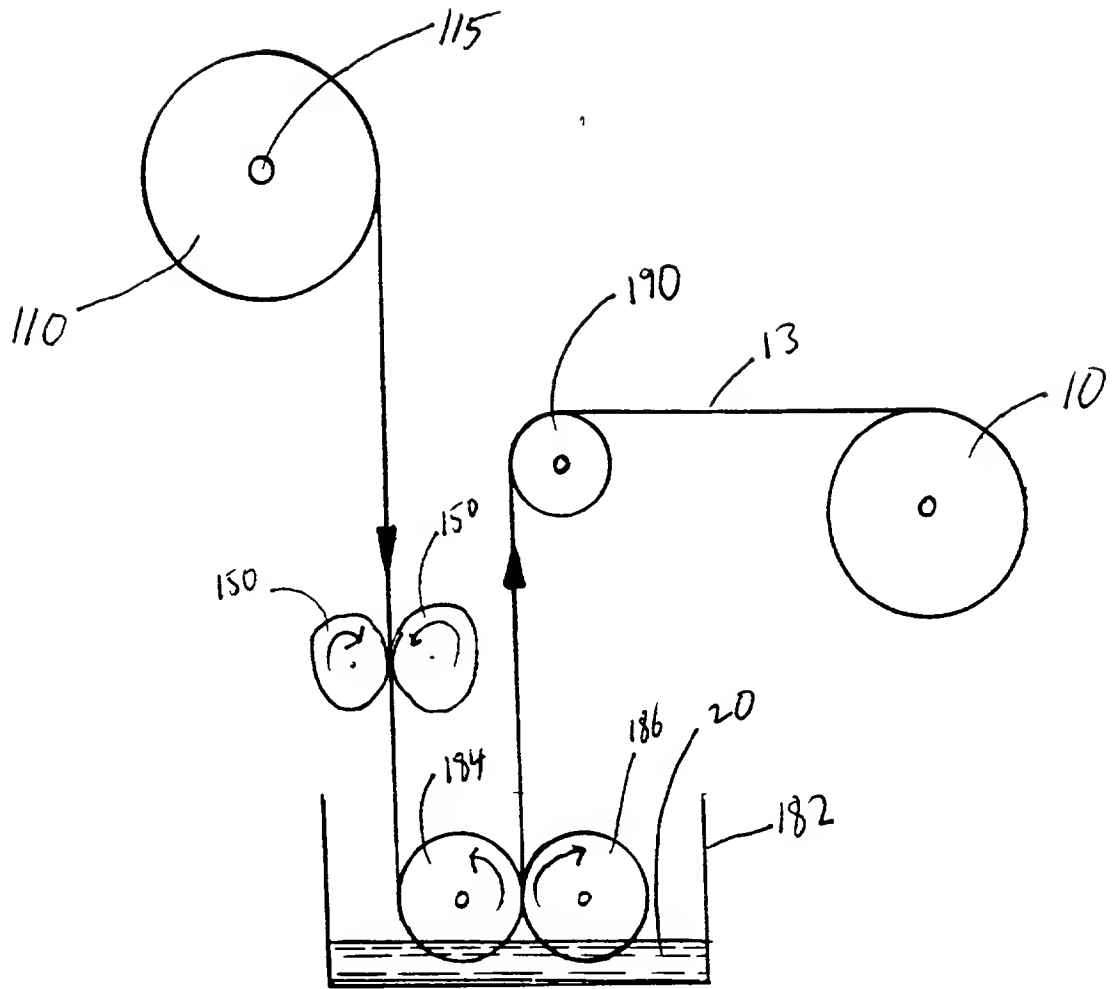


FIG. 7A

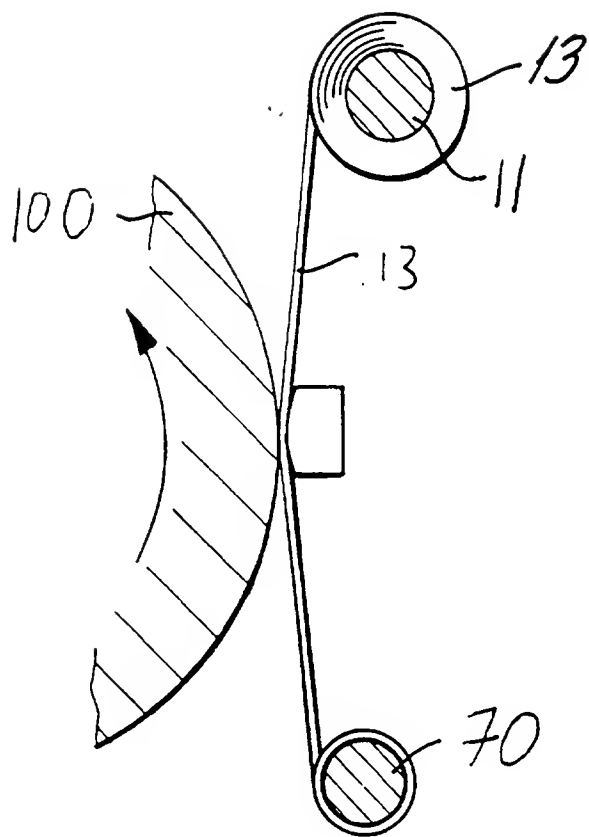


FIG. 8



COMBINED DECLARATION AND POWER OF ATTORNEY FOR
ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL,
DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

SOAK ON SITE AND SOAK ON PRESS CLEANING SYSTEM AND METHOD OF USING SAME

the specification of which

- a. ☐ is attached hereto
- b. ☒ was filed on May 1, 1995 as application Serial No. 08/431,932 and was amended on _____ (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

- c. ☐ was described and claimed in International Application No. _____ filed on _____ and as amended on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

☐ I hereby claim foreign priority benefits under Title 35, United States Code § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

☐ The attached 35 U.S.C. § 119 claim for priority for the U.S. application(s) listed below forms a part of this declaration.

| <u>Country</u> | <u>Application Number</u> | <u>Date of filing (day, month, yr)</u> | <u>Date of issue (day, month, yr)</u> | <u>Priority Claimed</u> |
|----------------|-------------------------------|--|---|--|
| | | | | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| | | | | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| | | | | <input type="checkbox"/> YES <input type="checkbox"/> NO |

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s) listed below.

[] In this continuation-in-part application, insofar as the subject matter of any of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

I hereby appoint the following attorneys and/or agents with full power of substitution and revocation, to prosecute this application, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith: John D. Foley (Reg. No. 16,836), John A. Diaz (Reg. No. 19,550), Thomas P. Dowling (Reg. No. 19,221), John C. Vassil (Reg. No. 19,098), Warren H. Rotert (Reg. No. 19,659), Alfred P. Ewert (Reg. No. 19,887), David H. Pfeffer, P.C. (Reg. No. 19,825), Harry C. Marcus (Reg. No. 22,390), Robert E. Paulson (Reg. No. 21,046), Stephen R. Smith (Reg. No. 22,615), Kurt E. Richter (Reg. No. 24,052), J. Robert Dailey (Reg. No. 27,434), Eugene Moroz (Reg. No. 25,237), John F. Sweeney (Reg. No. 27,471), Arnold I. Rady (Reg. No. 26,601), Christopher A. Hughes (Reg. No. 26,914), William S. Feiler (Reg. No. 26,728), Joseph A. Calvaruso (Reg. No. 28,287), James W. Gould (Reg. No. 28,859), Richard C. Komson (Reg. No. 27,913), Israel Blum (Reg. No. 26,710), Bartholomew Verdirame (Reg. No. 28,483), Maria C. H. Lin (Reg. No. 29,323), Joseph A. DeGirolamo (Reg. No. 28,595), Christopher E. Chalsen (Reg. No. 30,936), Michael A. Nicodema (Reg. No. 33,199) and Michael P. Dougherty (Reg. No. 32,730) of Morgan & Finnegan whose address is: 345 Park Avenue, New York, New York 10154.

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I hereby specify the following as the correspondence address to which all communications about this application are to be directed:

SEND CORRESPONDENCE TO:

MORGAN & FINNEGAN, 345 Park Avenue, New York, N.Y. 10154

DIRECT TELEPHONE CALLS TO: Scott B. Howard, Esq., Reg. No. P-38922
(212) 758-4800

Full name of sole or first inventor C. Robert Gasparri

Inventor's signature* C. Robert Gasparri

date

Residence 55 Quitard Drive, Port Chester, NY 10575

Citizenship U.S.A.

Post Office Address Same as above.

Full name of second joint inventor, if any Peter E. Anselmo

Inventor's signature* Peter E. Anselmo

date

Residence 20 Revere Place, Ridgefield, CT 06877

Citizenship U.S.A.

Post Office Address same as above.

Full name of third joint inventor, if any Walter H. Cano

Inventor's signature* Walter H. Cano

date

Residence 65 Asylum Street, Bridgeport, CT 06610

Citizenship U.S.A.

Post Office Address same as above.

☐ ATTACHED IS ADDED PAGE TO COMBINED DECLARATION AND POWER OF ATTORNEY FOR SIGNATURE BY THIRD AND SUBSEQUENT INVENTORS FORM.

* Before signing this declaration, each person signing must:

1. Review the declaration and verify the correctness of all information therein; and
2. Review the specification and the claims, including any amendments made to the claims.

After the declaration is signed, the specification and claims are not to be altered.

To the inventor(s):

The following are cited in or pertinent to the declaration attached to the accompanying application:

Title 37, Code of Federal Regulation, §1.56

Duty to disclose information material to patentability

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

Title 35, U.S. Code § 101

Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Title 35 U.S. Code § 102

Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless --

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent,

(b) the invention was patented or described in a printed publication in this or foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States, or

(c) he has abandoned the invention, or

(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or

(f) he did not himself invent the subject matter sought to be patented, or

(g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other ...

Title 35, U.S. Code § 103

Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Title 35, U.S. Code § 112 (in part)

Specification

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Title 35, U.S. Code, § 119

Benefit of earlier filing date in foreign country; right of priority

An application for patent for an invention filed in this country by any person who has, or whose legal representatives or assigns have, previously regularly filed an application for a patent for the same invention in a foreign country which affords similar privileges in the case of applications filed in the United States or to citizens of the United States, shall have the same effect as the same application would have if filed in this country on the

date on which the application for patent for the same invention was first filed in such foreign country, if the application in this country is filed within twelve months from the earliest date on which such foreign application was filed; but no patent shall be granted on any application for patent for an invention which had been patented or described in a printed publication in any country more than one year before the date of the actual filing of the application in this country, or which had been in public use or on sale in this country more than one year prior to such filing.

Title 35, U.S. Code, § 120

Benefit or earlier filing date in the United States

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.

Please read carefully before signing the Declaration attached to the accompanying Application.

If you have any questions, please contact Morgan & Finnegan

FORM: COMB-DEC.NY

Rev. 10/04/94